ABSTRACT

The invention is the design of a biological measuring device for the determination of the concentration of biomolecules (e.g. glucose) in an environment which is designed for implantation into an individual or for use in the context of an external apparatus. The device contains a composite membrane that is essentially entirely permeable to oxygen and permeable to larger biomolecules only in discrete hydrophilic regions. The membrane diffusionally limits the access of biomolecules to an enzyme, present in the hydrophilic region that catalyzes the oxidation of the biomolecule to produce hydrogen peroxide. A sensor in communication with the hydrophilic region is used to determine the amount of product produced or the amount of excess oxygen present allowing for the concentration of the biomolecule to be determined.